

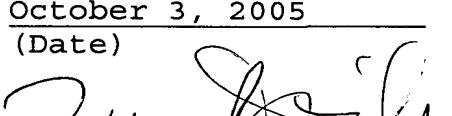


PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT
APPEALS AND INTERFERENCES

Applicants: Cheisan J.)
Yue, et al.)
Serial No.: 10/040,395)
Filed: January 07, 2002)
For: VARACTOR WITH)
IMPROVED TUNING RANGE)
Group Art Unit: 2811)
Examiner: S. Hu)
Attorney Docket)
No.: P01,0365)
Confirmation No.: 2072)
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October 3, 2005
(Date)

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APPELLANT'S REPLY BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
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Sir:

In rebuttal of Appellants' arguments of non-obviousness, the Examiner essentially asserts that one doping type or the other has to be chosen for the layer 42 disclosed in the Chiang '184 patent and, therefore, a p-type dopant can be chosen. The Examiner then asserts

that the Chiang '184 patent does not teach against choosing p- doping for the area 47.

However, the Chiang '184 patent discloses in column 3, lines 32-39 that the layer 42 is assumed to be n-type silicon with respect to the specific devices disclosed therein. In such devices, electron current flow takes place. For electron current flow to take place, n+ doping is presumably used to form the ground electrodes 45 when an n-type substrate is used.

This portion of the Chiang '184 patent then goes on to say that the same general principles apply to equivalent devices which have hole current flows. Presumably, hole current flows implies that that the layer 42 is assumed to be p-type silicon with respect to the specific devices disclosed therein. For hole current flow to take place, p+ doping is presumably used to form the ground electrodes 45 when a p-type substrate is used.

Therefore, the Chiang '184 patent would suggest to one of ordinary skill in the art that an n-type substrate is n+ doped to form the ground electrodes 45, and alternatively that a p-type substrate can be p+ doped to form the ground electrodes 45.

Accordingly, the Chiang '184 patent does not suggest the invention of independent claim 32.

The Examiner then argues that the Litwin '770 patent shows in Figure 2 two n+ regions in a lightly doped p-type well 22, citing column 4, lines 8-29. However, this portion of the Litwin '770 patent does not disclose that the p-type well 22 is lightly doped. Instead, this portion of the Litwin '770 patent merely discloses that the impurity concentration of the n+ source and drain regions 23 and 24 is chosen to be greater than the impurity concentration of the p-type well region 22. However, the nomenclature (designating the well 22 as a p well in Figure 2) suggests that the well 22 is moderately doped to for a p well rather than lightly doped to for a p- well as required by independent claim 32.

Accordingly, the Litwin '770 patent does not suggest the invention of independent claim 32.

With regard to the first problem in combining the Chiang '184 patent and the Litwin '770 patent, the Examiner asserts that the combination of these references is desirable to form a depletion type channel region with good channel modulation sensitivity. This assertion is a mere conclusion by the Examiner. Neither reference teaches that its device results in a depletion type channel region with good channel modulation sensitivity.

With regard to the second problem in combining the Chiang '184 patent and the Litwin '770 patent, the Examiner asserts that both the Chiang '184 patent and the Litwin '770 patent disclose lightly doped (p-) channels. However, while the Chiang '184 patent does disclose the use of a lightly doped channel, the Chiang '184 patent as discussed above and in Appellants Brief does not disclose the use of a lightly doped p- channel alternating with heavily doped n+ regions. The Litwin '770 patent as discussed above and in Appellants Brief similarly does not disclose the use of a lightly doped p- channel alternating with heavily doped n+ regions. Indeed, the portion of the Litwin '770 patent text cited by the Examiner does not state the doping of the channel but does show moderate doping in the drawing.

The Examiner replies that it is common to use p or n nomenclature to mean light, moderate, or heavy doping. The possibility that authors have in some cases been less than careful in nomenclature is not relevant. It is only relevant what one skilled in the art will understand from the nomenclature that is used. In this connection, it is conventional that, when light doping is intended to be conveyed, n- or p- nomenclature is used; when moderate doping is intended to be conveyed, n or p

nomenclature is used; and, when heavy doping is intended to be conveyed, n+ or p+ nomenclature is used. That is what one skilled in the art understands.

Therefore, because the Litwin '770 patent uses the nomenclature p in connection with Figure 2, and because the Litwin '770 patent does not disclose in connection with Figure 2 that what is meant is light doping, one skilled in the art will understand that the Litwin '770 patent is disclosing moderate doping.

Furthermore, that the Litwin '770 patent might disclose light doping in connection with other embodiments but does not disclose light doping in connection with the embodiment of Figure 2 is simply further evidence that the Litwin is conveying to one skilled in the art that the doping of the region of the well 22 should be moderate when the regions 23 and 24 are n+ regions.

With regard to the third problem in combining the Chiang '184 patent and the Litwin '770 patent, the Examiner asserts that references cannot be attacked individually. Appellants are not sure what the Examiner means by this assertion. Literally, the Examiner is asserting that the Appellants cannot discuss the references at all, because how otherwise can the

references be discussed than by pointing out what each one discloses and suggests and does not disclose and suggest.

In any event, Appellants argued in their Brief that, because the disclosures of the Litwin '770 patent and the Chiang '184 patent conflict, these references in combination would suggest to one skilled in the art that they cannot be combined.

With regard to the fourth problem in combining the Chiang '184 patent and the Litwin '770 patent, the Examiner did not really reply to the incompatibility of the teachings of the Chiang '184 patent and the Litwin '770 patent.

Accordingly, independent claim 32 is not obvious over the Chiang '184 patent in view of the Litwin '770 patent.

With regard to Appellant's arguments concerning dependent claim 34, the Examiner had no response.

With regard to Appellant's arguments concerning dependent claim 35, the Examiner had no response.

With regard to Appellant's arguments concerning dependent claim 37 (referred by the Examiner as dependent claim 36 in the Examiner's Answer), the Examiner responds by arguing that Appellants have not shown that floating

is not inherently disclosed in the Chiang '184 patent and the Litwin '770 patent. However, Appellants have no burden until that burden has been shifted by the Examiner.

Moreover, to be inherent, a feature must be inevitable from the disclosure of the references and, in this case, the Chiang '184 patent and the Litwin '770 patent simply do not provide any suggestion as to whether their channels float.

The Examiner states that channels are isolated by junctions and, therefore, must float. Suppose, however, that the channels are connected by some connection to either the gate or the regions surrounding the channel. Then, they would not float. The fact of the matter is that neither reference describes whether such a connection exists or not. Therefore, floating channels cannot be an "inherent" disclosure of either reference.

Therefore, dependent claim 37 is not obvious over the Chiang '184 patent in view of the Litwin '770 patent.

With regard to Appellant's arguments concerning dependent claims 39 and 40, the Examiner argues that high capacitive switching ratios are also desirable. However,

the point of Appellants' argument is that neither the Chiang '184 patent nor the Litwin '770 patent teach how to achieve such high capacitive switching ratios as recited in these claims.

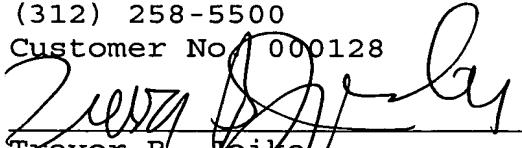
Therefore, dependent claims 39 and 40 are not obvious over the Chiang '184 patent in view of the Litwin '770 patent.

The Commissioner is hereby authorized to charge any additional fee which may be required to Deposit Account No. 50-1519.

Respectfully submitted,

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